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THE EXCAVATING ENGINEER PUBLISHING COMPANY

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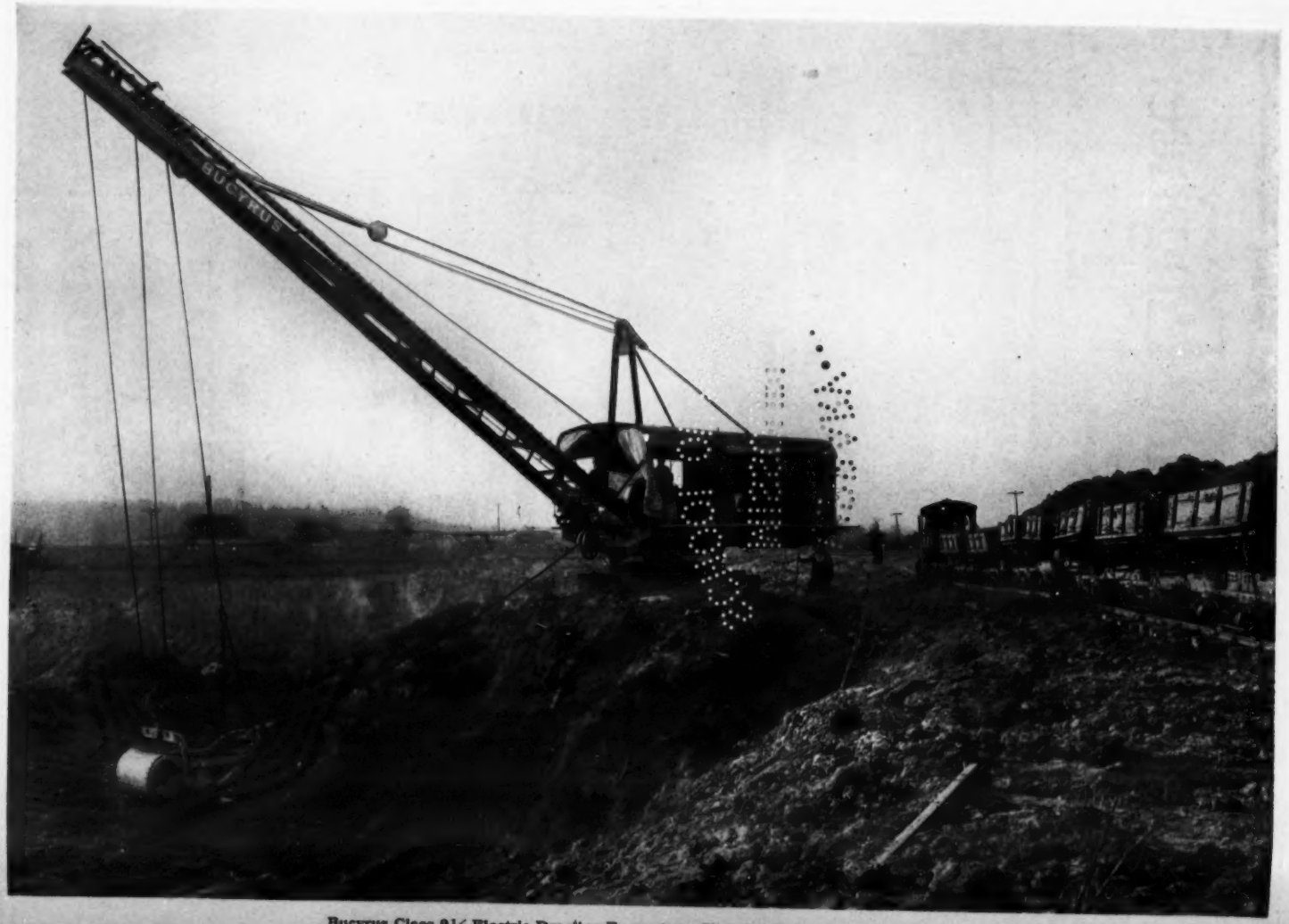
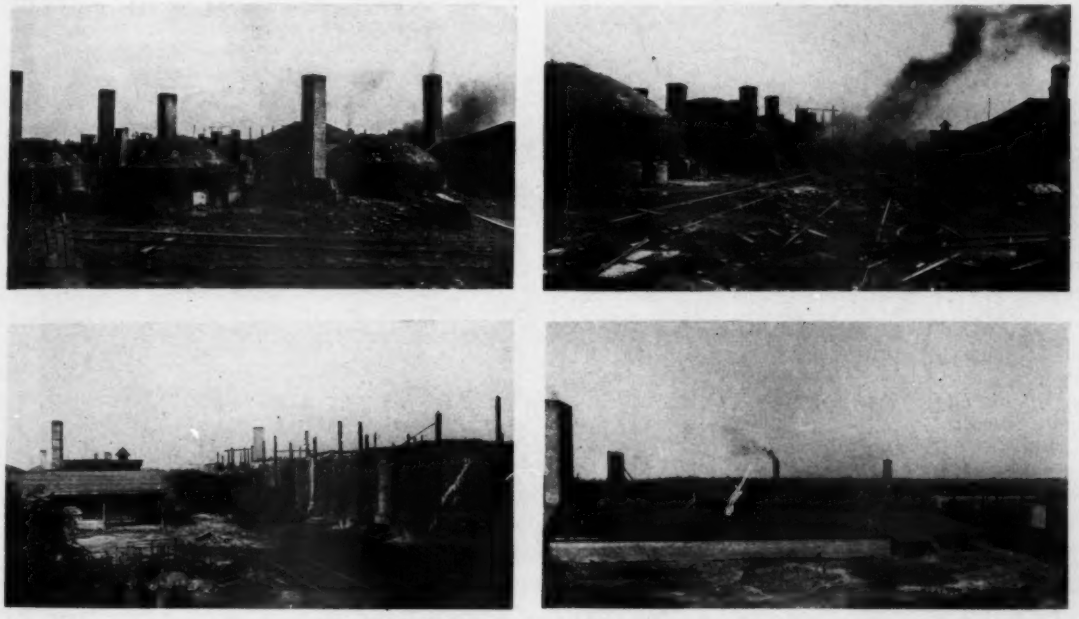


Bucyrus Class 9½ Electric Dragline Excavator—Cherokee Brick Co., Macon, Ga.

Mining Clay With Electricity

THE Cherokee Brick Company, of Macon, Georgia, is the only brick manufacturer in the world which is digging clay with an electric dragline excavator.

This company, which is perhaps better known to brick men as the Standard Brick Company, has a very modern plant carefully and thoughtfully laid out. Mr. W. E. Dunwody, the president, personally surveyed the location and drew the plans. The land was graded to a fractional part of an inch, kilns are used for end cut brick manufactured on a Chambers brick machine, and the down-drafts are used for the burning of face brick, which are made on E. M. Freese & Company's machine. The two plants are located side by side in such a way as not to interfere with each other. The office and store room is a single story brick building 50 feet wide and 100 feet long. The brick machines are at present driven by steam. A Williams No. 3 deck sweeper is used in the manufacture of face brick.



Views of the Cherokee Brick Company's Plant, Macon, Georgia.

consequently the machinery, dryers, kilns, tracks, etc. have never had to be changed since the completion of the plant thirteen years ago.

A considerable number of additions have been made within this period, but the original plans have worked out sufficiently well to obviate the necessity of any tearing down and rebuilding. The railroad facilities are splendid. The trackage consists of three tracks of the Central of Georgia Railroad, and three tracks of the Georgia Southern and Florida Railway Company, aggregating about 2,000 feet apiece and an equal amount of trackage for loading purposes.

The equipment consists of six up-draft clamp kilns and nine down-draft kilns. The up-draft This is operated by a 100 H. P. electric motor. The dryer equipment consists of an eight track A. B. C. dryer, adapted for the use of waste heat. The fan is operated by a 50 H. P. motor. This arrangement has been found very satisfactory and economical. Another five track fan dryer is supplied with auxiliary steam coils in which waste heat is used in the day time and live steam at night.

In addition to the above two dryers, there is a ten track dryer of the radiating heat type which is direct fired with coal. Over 300 dryer cars are used in the maunfacture of the brick.

In the near future the use of steam will be discontinued except possibly for drying a portion of the brick. The entire plant will be driven by electricity.

There are now in operation in the plant a 250 H. P. Corliss engine, one 100 H. P. motor, one 50 H. P. motor, and two 10 H. P. motors; besides the electrical equipment on the Bucyrus dragline excavator, which consists of one 80 H. P. motor, one 40 H. P. motor and one 2 H. P. motor.

Electrical power is furnished by the Central Georgia Power Company of Macon, Georgia at very reasonable rates, which has proved very much cheaper and more economical than steam power, as coal costs about $3.00 a ton in this vicinity.

The clay mine, which is located about a mile and a half from the plant, consists of about 400 acres. The clay was formerly mined by a steam shovel, but now a class 9½ Bucyrus electric dragline is used with far better results. Mr. Dunwody's own words in regard to this, are very convincing.

"When we were operating with an ordinary steam shovel, it was necessary to have two locomotives; one to drill the cars at the clay hole, and the other to transport the clay from the clay hole to the plant. Since we have put in the new dragline, we have discontinued the use of one engine, and approximately its crew, and now spot the cars with the bucket of the dragline in connection with a snatch block. Formerly we used eight to ten men on our track, and now we use only three.

In the operation of the steam shovel, we had two men on the shovel and two on the ground, where we have now only one man on the dragline and one on the ground. Formerly any high water put us immediately out of business, and we had to pump the water from the clay hole. By the use of the dragline, the water troubles us very little, as it is simply a matter of moving up two or three feet, and digging again, which means the loss of only fifteen or twenty minutes. Furthermore, owing to the splendid capacity of the dragline, we have plenty of time in which to make a move of this kind without any loss at the mill. One of the other great advantages is, that our engine and cars, (engine weighing 30 tons) are always on top of the ground, on the original earth, which gives a good road bed, whereas with the use of a steam shovel, we had to go down in the clay hole where the road bed was miserable and muddy, the engine and cars were continually jumping off the track, and it was only at very great expense, and constant trouble and care, that we were able to operate the plant at all.

Bucyrus Class 9½ Electrically Operated Dragline, Excavating and Loading Clay for Cherokee Brick Co. Near Macon, Ga.

The dragline is operated with electricity, and we therefore save the annoyance of having to transport coal to the clay pit, and the further annoyance of water troubles at the clay hole; that is, water for the boiler, which is always a very troublesome proposition.

Personally, I had rather go out of the brick business than to go back to the old steam shovel proposition.

The dragline has met every condition, and has proven a greater success than my fondest hopes.

We are mining clay with this dragline for 125,000 brick per day, and I don't think it would be any trouble to mine clay for 250,000 brick per day under conditions under which we operate. Our electrical

bill runs about $80 per month. The head operator gets $3 per day, and the man on the ground $1.25; so you can readily see that it is a very economical proposition."

The dragline excavator is equipped with a 45 foot boom and a 1¼ yard bucket. It is designed for 550 volts, three phase, 60 cycle. As stated above, it has a hoist motor of 50 H. P. and a 20 H. P. swinging motor. The main motor is controlled by a hand operated controller of the drum type. The swinging motor is provided with a multiple solenoid control designed for the automatic acceleration of the motor as well as "plugging" resistance circuit breaker and a drum type master controller. The compressed air for the operation of the cylinders for the main hoisting gear and the brake cylinder for the bucket tipping drum on the boom is furnished by a compressor driven by the main motor.

The machine is now digging a face of from 12 to 16 feet of clay. Objection has been made to this method of operation by reason of the fact that the different strata of clay could not be mixed. In reference to this, Mr. Dunwody says:—

"We want to say that we do not find that difficulty in mining our clay whatever, but on the contrary we find that we can make a very thorough mixture and that we are enabled to make a very much better face brick on account of the fact that we can select the clay from any different strata in the clay hole and thus get the best material for the manufacture of face brick."

The clay is hauled from the plant by one locomotive, and 6-yard Western dump cars.

Rust clay feeders are used at both plants. These have proved useful and economical. They seem to be splendidly adapted for feeding clay in uniform amount; in fact, they will feed 10 brick per minute during the day and require very little power to operate.

The clay feeders feed the clay onto conveyor belts, Leviathen belt 24 inch, 6 ply. The brick dry in 24 hours and burn at 1900 degrees in about 6 days firing.

The common brick are loaded direct from the kiln to the cars and sold throughout five states of the South; Georgia, Florida, Alabama, South Carolina and North Carolina, and some in Tennessee, though the majority of the business is done in Georgia and Florida.

The finished product includes several grades of brick ranging in price from $10.00 to $100.00 per thousand. The regular face brick, known as "Ratine", run in five different shades and the impervious smooth face brick, known as "Cravenette", in the same number. A red brick, "Cherokee", is also produced in the same number of shades and three different grades.

In addition to this a high priced hand-made arch brick is manufactured in limited amounts.

The plant, as a whole, is splendidly designed and constructed and the product is in keeping with the excellent equipment.

Record Shovel Output on the Grand Trunk Pacific

The shovel shown in the accompanying illustration, a class 44 Atlantic type, has, during the last year, made a remarkable record for itself. The shovel was working for Foley, Welch & Stewart in a ballast pit on the Grand Trunk Pacific near Cochrane, Ontario, Canada. The material handled was fine gravel and sand, and the average face twenty feet in height.

Class 44 Atlantic on Grand Trunk Pacific.

The working day was fifteen hours, one shovel crew being employed. For the greater part of the time two types of cars were used, Hart Convertibles with 25 cubic yards capacity, and Haskell & Barkers of 22 yards capacity. From the first of May to the last of October, 1912, a six month period, the shovel excavated 467,748 cubic yards with no serious delay due to repairs. During this period of twenty six consecutive weeks, the shovel actually averaged 2888 cubic yards a day, despite the fact that in one week the output was reduced to an average of 1845 yards per day, and in two others to 955 and 946 yards respectively. The first case cited was when the new pit was opened in early May. The shovel at the time was working in frost and was delayed by a shallow bank. In August, another new pit was opened, and a considerable amount of clay had to be stripped from over the gravel. Consequently flats had to be used instead of dumps, due to the sticky quality of the clay, and the daily output was reduced to an average of 955 yards. In October another bad week was encountered when much time was lost through the necessity of filling sink holes. This hindered the operation of the track gangs considerably, and a daily average of 946 yards was the result.

Excepting these three weeks the shovel averaged 3102 cubic yards per day for 23 weeks. The highest

daily average was 4281 yards during the week of July 6. The highest daily output was 6042 yards, the shovel working in a 70 foot bank. The highest monthly output was in July, when 122,958 yards were handled in 26 days.

All these figures were based on car measurement. It was found at the end of this period that the pit measurement exceeded the car measurement by 29,704 cubic yards.

The crew consisted of Dominic Lavigne, engineer, Ernest Green, cranesman and Chas. Law, fireman.

We are indebted to Mr. A. Kilpatrick, superintendent for Foley, Welch & Stewart at Cochrane, for the above figures.

The World's Record in Placer Dredging

According to the Engineering and Mining Journal, the Boston & Idaho Gold Dreding Co.'s 15 cu. ft. placer dredge at Idaho City, built by the Bucyrus Company and the Yuba Construction Company, made a remarkable record during 1912, handling 3,775,398 cu. yds. of gravel; or an average of 314,616 cu. yds. per month. The highest yardage in any one month was in October, 1912, when 361,190 cu. yds. were handled. So far as is known this is the highest monthly record, as well as the highest annual yardage, ever made by a 15 cu. ft. dredge. The nature of the ground is partly responsible, as from 75 to 90% of the gravel passes through the screen.

WHO'S GOT A JOB FOR THE PANAMA GANG?

Here we are, gentlemen; here's the whole gang of us,
Pretty near through with the job we are on;
Size up our work—it will give you the hang of us—
South to Balboa and north to Colon.
Yes, the canal is our letter of reference;
Look at Culebra and glance at Gatun;
What can we do for you—got any preference,
Wireless to Saturn or bridge to the moon?

Don't send us back to a life that is flat again,
We who have shattered a continent's spine;
Office work—Lord, but we couldn't do that again!
Haven't you something that's more in our line?
Got any river they say isn't crossable?
Got any mountains that can't be cut through?
We specialize in the wholly impossible,
Doing things "nobody ever could do!"

Take a good look at the whole husky crew of us,
Engineers, doctors and steam-shovel men;
Taken together you'll find quite a few of us
Soon to be ready for trouble again.
Bronzed by the tropical sun that is blistery,
Chuckful of energy, vigor and tang,
Trained by a task that's the biggest in history,
Who has a job for this Panama gang?

Berton Braley in Collier's.

The Bloomfield Clay Company

The Bloomfield Clay Company of Perth Amboy, New Jersey, are operating an 18-B Bucyrus shovel. At the present time it is being used in stripping, but it is expected shortly to put the machine in the clay. The shovel is illustrated below. Mr. Charles A. Bloomfield, president of the company and ex-president of the American Brick Manufacturers' Association, is the gentleman in the foreground.

The Bloomfield Clay Co's. 18-B Bucyrus Shovel, Stripping.

The Plant of the Barr Clay Company

THE plant of the Barr Clay Company was erected on the north bank of the Vermillion River, 2½ miles south of Streator, Ill., about twenty years ago for the purpose of manufacturing vitrified shale paving brick.

The shale from which their brick are made, is of soft rock formation and is taken from an open pit on the south side of the Vermillion River. For many years, or until the pit was well developed, this shale was blasted and loaded into cars by hand labor. In 1902 they purchased a 65-ton Bucyrus steam shovel which loosened and loaded their requirements of shale until 1909 when they doubled their capacity and bought a model 70-C Bucyrus for this purpose, taking the 65-ton shovel on top of the shale to handle the overburden which had previously been removed by hydraulic stripping and hand labor.

The depth of the shale is from 20 to 30 feet. Enough dynamite is used to crack it slightly at the bottom and completely shatter it above the reach of the dipper, so that it will fall as undermined, thereby coming within reach of the shovel and thoroughly mixing the shale from top to bottom.

The shovel crew consists of five men; engineer, cranesman, fireman and two pit men. A 1½-yard dipper is used, loading into trains of six 2-yard cars as shown in cut. It is kept only fairly busy loosening and loading the required 800 to 1,000 tons per 9-hour day. Owing to the severe strain in cutting the shale, the dipper and chain expense is the main item of upkeep.

The loaded trains are switched by a Baldwin saddle tank locomotive to the foot of an incline, up which they are taken by a tail rope electric hoist. When the level at the top is reached, the clutch is released, allowing the train to proceed by gravity, taking the tail rope with it across the river bridge to the grinding rooms where the cars are dumped; the empties having returned in the same manner.

70-C Bucyrus in Shale—Barr Clay Co., Streator, Ill.

The shale is ground by six 9-foot dry pans, elevated and screened. From the hoppers beneath the screens it passes to the pug mills where it is properly tempered with water and is then conveyed by belts to two Chambers Bros. auger brick machines—one a heavy pattern end cut, the other a Keystone No. 1 side cut. These brick machines force out a column of clay of the desired size and density to machines which automatically cut it. These cut pieces are carried by off-bearing belts to ten double mould represses. After being repressed they are loaded by men onto dryer cars, an air space being left between each row. As soon as loaded these dryer cars, holding about 400 brick each, are transferred by electrically driven transfers to the waste heat dryers. These dryers are low, fire-proof buildings, divided into tunnels only sufficiently large to allow the car with its load to

Shale Train Moving Up Incline.

Dumping Shale at Grinding Rooms.

Brick Being Fed Into Represses.

From Represser to Transfer Car to Dryer.

Putting Green Brick Into Dryer.

Dry Brick From Dryer to Kilns.

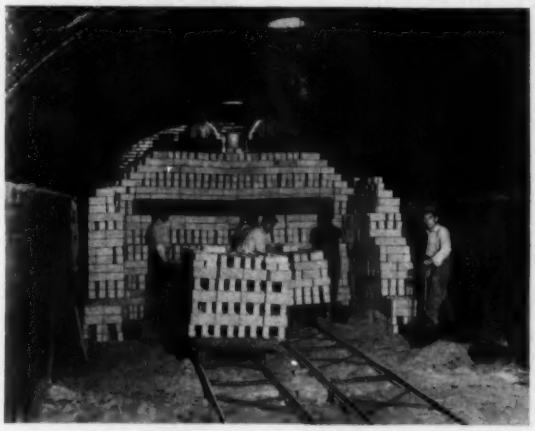
Views of the Barr Clay Company's Plant.

pass through. The drying is accomplished by a system of electrically driven fans and underground air passages. The fans pulling the hot air from kilns of brick which have been burned and forcing it through the brick on the dryer cars in the above mentioned tunnels at a temperature of about 2,500° F.

The brick remain in dryers until dry (usually 24 to 48 hours) then are transferred to kilns, where they are removed from the dryer cars and set in kilns in a systematic manner for burning. When the kiln is full it is tightly sealed and the burning process (which takes from 7 to 9 days) begins. After burning, the brick are allowed to cool slowly until men are able to handle them, when they are drawn from the kilns and placed either on stock piles or loaded in cars for shipment.

Their kiln equipment consists of 25 rectangular kilns of about 150,000 capacity each and 11 round kilns of about 50,000 capacity each. The central power plant which furnishes all the power used, except steam shovels and locomotives, of which there are two Davenports and one Baldwin, is equipped with two 300 and two 136 H. P. Babcock and Wilcox boilers, with necessary feed pumps and heater, one 20x48 Allis Corliss engine belted to a Westinghouse A. C. generator which provides current for hoist, dryer fans, transfer cars, machine shop, inside and outside lighting, pumps, drills, etc., and one cross compound Hamilton Corliss engine H. P. cylinder 24″x48″ and L. P. cylinder 48″x48″ which drives with the English rope drive system, all the brick making machinery. Both engines run condensing, a vacuum of not less than 27″ being maintained by a Baragwannath vertical, surface condensor and Dean and Holyoke vacuum pump.

While their output is very largely paving material which by the way, has to pass standard tests adopted



Setting Dry Brick in Kilns.

by city engineers and manufacturers, their celebrated Colonials are much used for face brick on account of their architectural beauty as well as durability and non-absorbant qualities. Other brick, which is a necessary by-product of the paving brick industry, are used for buildings, foundations, silos, etc.

Shovel Operation in Unblasted Slag.

Accompanying illustration shows a 70-C Bucyrus shovel owned by the Swedeland Slag Company, of Swedeland, Pa. The slag is dug without blasting. During the past year the shovel has been operated only at about one-quarter of its capacity on account of the limited amount of material required. The output for this period was about 250,000 tons. The operators report that no time was lost on account of the shovel and they have yet to have their first breakdown. Thomas E. Knox is running the shovel and E. M. Flynn is craning.

70-C Bucyrus Steam Shovel, The Swedeland Slag Co's., Digging Brick Shale.

There's a marvelous bird called a Pelican,
Whose mouth can hold more than his belican.
Enough food for a week,
He can keep in his beak
Though I do not see how in the helican!

Her voice from the window above—Drunk Again!

He, striving to locate the keyhole—Ssho am I, old top!

70-C Bucyrus Shovel Equipped With a 40 Foot Boom—Montgomery Red Clay Gravel Co., Montgomery, Ala.
From Left to Right the Gentlemen in the Foreground are Messrs. P. F. Miller, Secretary and Manager, and L. C. Young, President.

Digging Red Clay Gravel in Alabama

THE Montgomery Red Clay Gravel Company was organized May 11, 1912 for the purpose of mining and selling red clay gravel for road surfacing and railroad ballast. A contract was made with Montgomery County to load the gravel at their pit, eleven miles west of the city of Montgomery on the Western of Alabama Railroad—the oldest railroad in the state.

This pit has about 10 feet of red clay on top, 15 feet of clay and gravel next, and 10 to 15 feet of sand and gravel below. It is necessary to mix the clay, clay gravel and sand gravel together to make good road material. In this climate where it never freezes, the clay is as necessary as the gravel in order to make a smooth and lasting road.

The offer was made by the company to the Board of Revenue of this county, to equip the pit with new and modern machinery that would cut the bank from bottom to top and in so doing mix the different kinds of material as they fell in such a manner that when loaded in the cars it is good road material, without further mixing. This could be done for 12½ per cubic yard. The offer was accepted and the Montgomery Red Clay Gravel Company was given the right to sell to others when not loading for the county.

The ink was hardly dry on this contract before Mr. L. C. Young, president of this company, was on his way to South Milwaukee, to buy a Bucyrus long boom shovel. The shovel bought was a special Bucyrus 70-C. The boom is 40 feet in length enabling the shovel to cut 35 feet from the bottom to the top of the bank. To guard against the lifting of the rear end of the shovel, weights of 16,000 pounds were added as ballast.

The dipper has a capacity of two cubic yards and is fitted with 36 inch teeth instead of 24 inch; which is the usual practice.

These teeth are of a special design in order to adapt them to this proposition. They are made entirely of tool steel with a 21 inch point and a 15 inch shank. The point is unusually thick in cross section, the purpose being to allow the tooth to be drawn out as the point wears off. The shank is fitted into a socket cast into the dipper lip. The long teeth, four in number, have a tendency to act as a rake and have proved very effective for this purpose.

In order to balance the shovel when swinging the heavy boom, special jack arms of the A-frame type are furnished. This gives a 24 foot spread instead of 18 feet 4 inches; which assures perfect stability. The main engines are 9 x 14 and the swinging engines 8 x 8.

The balance of the shovel is so perfect that in spite of the extra weight of the long boom, it is as fast as a standard machine; in fact it will easily make more than three trips a minute when digging the loose material at the toe of the face.

The method of mixing the material is interesting. While the shovel is waiting for cars, the whole face is gone over with the dipper door open. From six to eight inches are shaved off in a cut for the entire height of the bank; the material gathering in a pile at the foot of the bank. When the entire face has been cut once in this manner, the loose material is picked up with the dipper and allowed to pass through the door, thus assuring a uniform mixture. This is done twice for the whole length of the face.

The gravel deposit is on a very high tract of land of about two hundred acres. The grade is such that 5 to 8 cars are all that the 35 ton saddle tank locomotive can take up the hill at a time. This materially cuts down the output; but in spite of this fact 1783 cubic yards have been loaded in 53 cars in a period of 8 hours.

Twelve men are employed; three white and nine negroes. Salaries are, shovel engineer $120.00 per month, cranesmen and locomotive engineers each $50.00 per month, all negro labor $1.00 per day.

Water is taken from a shallow well in the pit; coal is shipped from Birmingham mines, and the cost at the pit is $2.60 per ton for mine run.

This pit was first opened in 1908 and operated by different concerns with several different shovels, but always at a loss to the contractor and at a heavy, unnecessary expense to Montgomery County. Under the management of P. F. Miller, secretary and manager of the company, this business has been made a very profitable venture. Indeed, over 1000 cars are now being loaded per month.

Gravel is furnished from this pit for building the roads in Montgomery County, for street construction in Montgomery City; to the Central of Georgia Railway, the Atlanta and West Point Railway; and the Western of Alabama Railway for ballast.

Bucyrus 18-B Shovel, New Jersey Clay Products Co.

The Plant of the New Jersey Clay Products Co.

THE Brick industry in the state of New Jersey dates back before the Revolutionary war, but the tile or fireproofing industry seems to have started only 35 years ago, with the manufacture of hollow brick. It has grown to great size, owing to the demand for fireproof building material in the city of New York, and the ever increasing use of building blocks for houses and barns in the suburban towns. Practically all of the hollow ware is manufactured along the Raritan River, about thirty miles from New York.

The New Jersey Clay Products Company was incorporated in 1901, and has grown from a very small beginning to be a factor in the trade. Its methods of manufacture are similar to those employed in other factories. Its principal claim for the excellance of its product, however, is based upon the character of the raw material used.

Instead of using the general run of clays with which nearly all of Middlesex county is underlaid,

18-B Bucyrus Shovel Stripping.

this company makes use of a mixture of a red terra cotta clay and red shale; the former being the clay used in earlier days for architectural purposes.

The clay is won by hand, after being stripped of its overburden by a Bucyrus 18-B steam shovel. The shale is also won by hand. So successful has the shovel been in its work that it is the intention of the company to install two more in the near future, one for winning the clay and the other for winning the shale, which is usually soft enough for the shovel to pick up without blasting.

The clay is run from the clay bank to the clayshed with a twenty ton locomotive, in three yard wooden dump cars. In the clayshed it is carried by conveyor belts to a disintegrator which grinds the clay up, and from which it is conveyed automatically to the pug mill, where it meets the shale ground to twenty mesh by two nine foot dry pans. Sufficient water is here added to make a plastic mixture, and

New Jersey Clay Products Co's. Plant.

the clay is fed into a Freese Mammouth brick machine, which turns out the size blocks desired through unlubricated die. The blocks are piled on dryer cars by hand, and placed in a fourteen track tunnel dryer, and dried with waste heat from the cooling kilns. After drying the blocks are set in circular down-shaft kilns and burned about four days so that the period from the claybank to New York is occasionally less than two weeks. After cooling, the blocks are drawn from the kilns and placed generally upon large deck scows and towed to any desired point in New York Harbor. Some-

Schooner Loaded With Hollow Tile Fire Proofing.

times when smaller lots are desired and the shipping distance too great for a larger boat, blocks are loaded in canal boats or on schooners. Blocks for suburban delivery are shipped out by rail in box cars.

The process is practically the same as carried out in other tile factories, although some use steam presses for their large blocks in place of the auger machine, and some use steam dryers and direct heat dryers in place of the waste heat system. Others use forced draft on their kilns, and in at least two factories continuous kilns are in use. All the plants are year-around factories. With the brick industry it is different. By far the larger part of New Jersey's output of common brick is from summer brick yards, which are only operated six months of the year; the brick being dried outdoors in the sun and burned in scove kilns, but every year sees more auger machines and more wire cut common brick dried in tunnel driers. The common brick manufactured in this district are used mostly in the filling in of buildings in New York. The tile industry divides itself into fireproofing, which is used for partitions, floor arches and hollow building tile, flue linings, electrical conduits, wall coping and sewer pipe. Besides brick and tile, the district manufactures architectural terra cotta, firebrick, glazed wall tiles, chemical stoneware and sanitary ware, besides shipping out quantities of clay for the same use in other localities.

Truly the mind of man and the hand of man, working in unison, can do wonderful things; when we consider that from the same materials given as from mother earth, which gave to the cave dwellers, and the owner of the mud hut his shelter, we now have one of the wonders of this age—The modern fireproof skyscraper.

Another View of the New Jersey Clay Products Co's. Plant.

The Wabash Clay Company.

The Wabash Clay Co., of Veedersburg, Ind., the company that supplied the brick for the great Indianapolis motor speedway, operate a 70-ton Bucyrus shovel in their shale pit. This pit is 3000 feet long with a face of 25 to 35 feet in height. The shale is only occasionally blasted, the shovel having sufficient power to obviate the necessity of thorough shooting. In this material the shovel averages 350 yards in from 8 to 10 hours. This is, of course far below its capacity but is sufficient to supply the demand. The shale is loaded into Peteler dump cars and hauled a distance of one mile by a 9x14 three foot gauge locomotive to the plant. The shovel is operated by the usual crew of three men.

70 Ton Bucyrus Shovel Digging Unblasted Shale.

View of The Wabash Clay Company's Plant.

The Excavating Engineer

[FORMERLY STEAM SHOVEL NEWS]

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Excavating Machinery for Brick Plants

We are living today in an age of scientific management of business. The manufacturer who does not know accurately how much it is costing him to turn out his product is almost certainly on the road to failure; or, at best, is not making the profit he might in his particular business.

A direct result of keeping accurate cost records is the ability of the management to see what departments are operating at a loss and what ones are operating at a profit. With such a report, available it is at once possible to take steps to find out why such and such a department is not showing a profit and apply the proper remedy thereto.

In a large percentage of cases the remedy consists in substituting machinery for manual labor or at least in reducing to a minimum the amount of manual labor in any particular operation.

It is a recognized fact that the more ignorant the worker, the less is he to be depended upon. For that reason the wise manufacturer employs as little "common labor" as possible, consistent with the efficient operation of his plant.

One of the greatest labor savers in point of men displaced per machine is the modern power shovel, or dragline excavator; and nowhere is this saving more evident than when these machines are used in connection with the manufacture of clay product.

Broadly speaking, a plant for the manufacture of clay products consists of two units: The clay bank or source of raw material, and the factory in which this material is worked up into the finished product.

Practically all clay products are made by machinery or skilled labor, hence in order to keep the factory running to capacity it is essential that there be a regular supply of raw material. This cannot be depended upon when the clay is loaded by hand, and as a result the power shovel is fast coming into general use.

The advantages to be gained by the use of the shovel are not confined to the reduced cost of loading the clay, even though the loading cost is more than cut in two, but are more apparent and of greater importance in the manufacturing end of the business.

When clay is loaded by a shovel a thorough mixture can be obtained from bottom to top of bank without extra labor, a condition which is often of the greatest importance and can only be accomplished by hand labor at considerable extra expense and delay.

Inasmuch as the shovel will load a wagon or car in one-quarter to one-third the time required by hand labor, it follows that fewer wagons or cars will be necessary to handle a certain output, as they are kept moving a much greater percentage of time.

When the shovel is used it is operated by one or two responsible men so that the management can depend upon a regular supply of clay practically regardless of weather conditions or the available supply of common labor. It is in this connection that the greatest saving is accomplished by a shovel, because it means that the plant can be continuously operated to capacity and that there will be no costly delays with idle men standing about waiting for material.

As it takes an average of two to two and one-half cubic yards of material to make one thousand bricks, a revolving shovel, such as the Bucyrus 14-B, is therefore able in all ordinary clays to supply a plant having a daily capacity of 100,000 brick.

The plants of large capacity where no unusual conditions are encountered a 7/8 yard revolving shovel, such as the Bucyrus 18-B, used by the New Jersey Clay Products Co., (see p. 417), is recommended.

Occasionally conditions arise where, in order to get the proper mixture, it is necessary to make a complete cut from the bottom to the top of a face 25 to 40 feet high, and in no other way can this be done as economically or satisfactory as with a shovel. To meet these extreme conditions a standard shovel with a special long boom and dipper handle is the

most efficient tool. The usual combination is a shovel with a 40′ 0″ boom, 28′ 0″ handle and a two-yard bucket similar to the shovel used by the Montgomery Red Clay Gravel Co. described and illustrated on page 415. This shovel will cut from bottom to top of a face 35′ 0″ high, and has a clear dumping height of 23′ 0″.

A great many brick plants use shale as their raw material which varies from a hard clay to a substance nearly as difficult to dig as solid rock. It is almost always necessary to blast this material when it is loaded by hand, thereby adding greatly to its cost.

A small revolving shovel would generally be able to load a sufficient quantity of the loose shale, but would not have the necessary power to dig it without blasting. To meet such conditions a larger, more powerful shovel, such as the Barr Clay Co. uses (see page 411), is the most economical.

A machine of this kind has sufficient power to shave off a thin layer of the solid shale, which makes it unnecessary to go to the expense of blasting. Numerous shovels of this kind operating in different parts of the country have proved a very profitable investment, even though they are only operated to a small per cent of their ordinary capacity.

Often conditions are such that a dragline excavator is the best machine. Such a case is dealt with on page 406 under the description of the Standard Brick Co's plant.

Summing up in a few words the entire situation, it is safe to say that any plant, using over one hundred yards of raw material a day, will find a shovel a very profitable investment. Not only will it prove a money saver, but by supplanting a large part of the common labor, will relieve the management of much worry and trouble.

Construction Outlook.

It cannot be denied by the most optimistic that there is a very distinct industrial depression throughout the country. Business in general is slowing up. This despression can be traced to a number of contributary causes, all of which tend to confirm the general opinion that it is only of a temporary nature.

The first cause to which we turn is, of course, the proposed tariff legislation. The business world is waiting to see what is going to happen. No matter how beneficial the result may be to the body politic, such a condition as the present was inevitable from the first. The sooner the operation is over the better for all.

The Balkan War has also been a powerful contributory agent, inasmuch as it has caused the withdrawal of foreign funds from this country. Now that things seem to be slowly calming in that part of the world, this cause for irritation should gradually subside. The Frisco failure however, has had a very disastrous effect on the foreign security market, as owing to the questionable tactics persued, foreign investors have been heavy losers. The result has been a big and a very natural slackening in confidence in American tactics and consequently in the demand for American secureities.

There are doubtless other economic causes, which bear a relation to the present state of affairs, but the above mentioned conditions alone are enough to render it difficult to float securities of any description. If we were to look for encouragement in the reports on work done in the past month, or of work contemplated, we would be much disappointed. We may say on the other hand that there is no doubt whatsoever that business will pick up, if not in the later summer—in the fall. A good crop is sure to restore the confidence of the railroads and much of the immense amount of work is which contemplated, will be started.

In substantiation of this comes the announcement that most of the larger railroads having their headquarters in Chicago, will not abandon the work already planned. They feel that the betterments for which there is such a crying need, will more than make up for the present high prices on wages and materials.

Canada gives definite voice to our predictions with the announcement by Sir Thomas Shaugnessey, president of the Canadian Pacific Railway, that $100,000,000.00 will be expended during the forthcoming year on improvements and extensions to their line.

We expect by the next issue to report more definite encouraging news from the railroads.

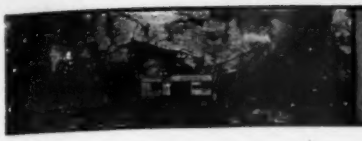
Levee and drainage work seems to be keeping up splendidly. A large amount of work has been let during the past month and still more is promised. Municipal work is also very active, and a fair amount of highway work is promised.

"Bucyrus" A Canadian Trade-Mark

The Dominion of Canada has awarded to the Bucyrus Company, trade marks covering both the general and specific use of the name "Bucyrus" so that the name cannot be used in the Dominion in any way, especially in regard to steam shovels and similar machinery, unless with the authority of the Bucyrus Company.

A Warning

A Mr. C. J. Thompson has recently been representing himself as an officer or salesman of the Bucyrus Company. That company wishes it understood that such a man is not now, and never has been in any way connected with it.



Field Notes

DISCUSSION IS INVITED FROM MEN IN THE FIELD ON SUBJECTS HERE PRESENTED

Another Method of Babbitting Shipper Shafts

In our May number we published a quick method of babbitting a shipper shaft; a suggestion of Mr. C. J. Smith.

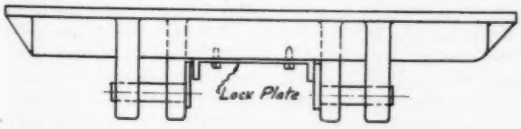
By this method it is necessary to rely on your boom engines to lift the shaft out of the bearings. This was done by allowing the dipper to swing as far back beneath the circle as possible and running the handle up slightly. In answer to our query as to whether any one else had a better idea, Mr. Johnny Flaherty of Shenandoah, Pa., tells us that steam on the crane engines is a big draw-back while working on the boom. He gives us a method of raising the shipper shaft in order to babbitt, without any need of depending on the crane engines.

First place two ties on top of the A-frame, and one tie on top of the two. Chain them securely to the A-frame braces. Then draw the dipper handles up until they rest on the ties. Take off the shipper shaft caps and hoist the shaft with the main engine.

The old babbitt may then be removed from the bearings, a small piece taken from the cap and placed under the shaft which is then dropped in place. Then proceed to babbitt as described in the May number. Does anyone know of an improvement on this method?

To Prevent Breakage of Handle Hinge Pin

On many older shovels considerable trouble has been experienced from time to time by the breakage of the handle hinge pin. This is a long heavy pin passing through all four lugs of the dipper hinge frame casting and held in place by blank bolts passing through the pin inside the inner lugs. This pin often breaks through the bolt holes.



One method of preventing this trouble is to use two short pins instead of one long one; as per sketch. These bolts have big rectangular heads. A lock plate, (see sketch) is fastened to the casting between the lugs by means of ¾ inch or ⅝ inch tap bolts. This plate has its ends turned up in order to bear against the rectangular heads of the pins and thus keep them in. It is understood that interference of the dipper door hinges prevents the heads from being put on the outside.

Instructions for Erecting a Knock-Down Shovel

(Continued from June Number.)

Trucks.

While the car body is in course of erection, the axles will have been placed in the trucks and the trucks completely assembled. The trucks can then be run under the car body and the car body dropped in place on the trucks.

The front and rear trucks are alike.

Machinery.

The machinery can now be placed. A convenient order of work is given below:—

A general drawing showing the lay-out should accompany the shovel. The truss block may be fastened in place on the deck of the car body above the rear trucks. This forms the anchor for the back brace.

The boiler together with its support should next be placed. It can be clamped down by the rods and turnbuckles as shown on the general drawing. The water tank follows.

The main machinery may now be placed somewhat in the following order; main hoist drum together with clutch, shaft and bearings, main engine unit complete, propelling shaft, bearings and gear.

This will complete the main hoisting machinery unit. Of course everything should be properly aligned and proper root clearance left between pinions and gears. All the bearings are held in place by fitted bolts; and simply bolting them to the places indicated on the general drawing should be sufficient. However, it is possible that some of the members may have been bent in shipment, so care should be taken to see that everything goes together properly, as mentioned above.

The A-frame can now be placed. The swinging machinery should next be assembled. Drum, shaft and bearings first; intermediate shaft second; and engine last.

The large swing circle washer should be dropped on the main base plate pintal on the front end of the shovel. The swing circle is next dropped on the pintal, care being taken not to get it upside down.

On the top of the swing circle center are eight holes for fitted bolts.

The sheave directly above the swing circle center under which the main hoist ropes run is called the

tilting sheave. The tilting sheave bracket should be bolted onto the top of the swing circle center with eight fitted bolts. The tilting sheave shaft can next be dropped into the bracket just mentioned and the set collar can be placed and tightened on the lower end. The sheave itself can now be placed at the upper end of the tilting sheave shaft. The tilting sheave fork of course goes between the jaws at the upper end of the shaft. The tilting arm should be screwed into the tilting sheave fork and run back through a bracket which consists of merely two bent bars fastened together. The upper end of this hoisting is about on the level with the top of the bracket drum and a very short distance behind it. The lower ends of this bracket are bolted to the upper and lower sides of the forward cross beam casting just to the left of the center.

The idler sheave bracket which guides the swinging rope from the bottom of the swinging drum around to the right hand side of the swing circle, should next be placed. This is shown on the general drawing. The base of this is Tee shaped, the long end of the Tee going to the left hand side sill of the car. The idler sheave pin, with the idler sheave itself can be dropped into place and fastened. The smooth side of the idler sheave goes up.

The swinging ropes can now be stretched. The left hand or shorter rope leads from the swing circle at the right of center, around the front and along the left hand side, then straight back to the top of the swing drum. It should be run through the hole at the end of the swing drum away from the gear and fastened to the outside of that end of the swing drum by means of the stud bolts and short bars of iron. Of course there should be several winds of rope around the swing drum. The right hand swing cable is stretched from the left hand side of the swing circle around the front and right hand side of the swing circle and diagonally back to the swing rope idler sheave, over this sheave and then directly back to the underside of the swing drum. After winding a few turns, the end is fastened to the end of the swing drum next to the gear.

It will be seen from the plan view of the general drawing that the ends of the swing rope are anchored to the swing circle cross beam just back of the swing circle center by means of adjusting rods threaded on one end and with a clevice on the other end. The rope is clipped around a rope thimble which goes into the clevice.

The thrust cylinder goes on the right hand of the main hoist shaft, and inspection will show how this thrust operates.

The feed pumps and piping should now be put in. The piping drawings,(which can be obtained from the manufacturers if not sent with the shovel), show the piping about as clearly as it is possible to indicate this. This also applies to the operating levers, these should be fitted so that they work easily. This and any other remaining machinery should now be fitted to the steam shovel.

The boom machinery should be assembled on the boom with the boom laying separate from the car body. It will readily be seen that the design of boom engine provides for a three point suspension or support. The upper end of the boom engine should be very firmly bolted to the shipper shaft bearings. The shipper shaft is the shaft which carries the pinions which mesh with the dipper handle rack. If necessary a washer may be placed between the upper end of the engine and the shipper shaft bearings.

The assembling of the dipper and dipper handle is simple. The erection drawings will clear up any difficulty encountered.

In general, the need of good fitting and proper alignment cannot be overemphasized. This shovel of course has been completely assembled in the factory and if anything does not appear right, the matter should be carefully looked into. It is very possible that a bearing might have been put end for end or some similar mistake made. We know of a man who was sent from America to Spain simply because the swing circle had been dropped in place wrong side up.

The matter of workmanship, getting rivets and bolts tight, etc. is another very important point. No machine in the world is given heavier usage than a steam shovel and the strength and tightness with which it is assembled at first has a great effect upon the life of the machine as well as upon the amount of repairs required.

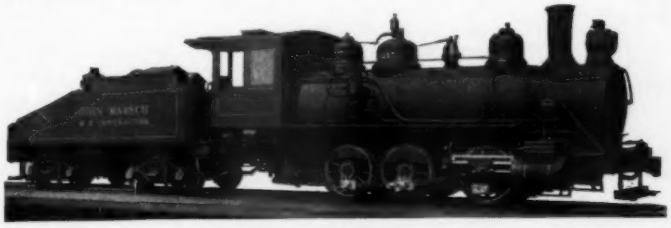
There is an extra link which can be added to the lower end of the back brace for the A frame. This will allow the A frame to drop forward to a 45 degree angle and allow the shovel to be shipped over the railroad when the boom, dipper and dipper handle are removed.

To Keep Rails from Turning Over

Mr. V. A. Loomis, who is operating a 100-C Bucyrus shovel for the C. B. & Q. in Thermopolis, Wyoming, gives us a very simple device for preventing the rails from turning over under the forward truck of a shovel operating in rock. This is merely a top bridle bar made of 1¼ inch square iron. It is bent so that it will hook over the flanges of the rails. Mr. Loomis states that he has seen the section shoved over six inches with this device and the rails stood upright. One should be used in front of the front wheels, and the other behind the back wheels of the forward truck.

Contractors Locomotives

The accompanying illustration represents one of two six-coupled locomotives recently built by The Baldwin Locomotive Works to the order of Mr. John Marsch, railroad contractor. The type of engine shown is one which, for many years, has been doing excellent work in general switching service. The entire weight of the locomotive is on the driving wheels, and is therefore available for adhesion. The wheel-base is short, and the locomotive can easily enter sharp curves and switches. The separate tender provides large fuel and water capacity, so that the locomotive can remain on the road for considerable periods of time without having to replenish its water tank and fuel bin. This is of special advantage in contracting work, where operations are frequently carried on some distance from the base of supplies.



Baldwin Six-Coupled Locomotive.

The locomotive shown is equipped with combined automatic and straight air brakes, and is fitted with one 9½-inch pump on the left side and one 8½-inch cross-compound pump on the right side. An extra reservoir is carried on the tender, to store air for the operation of pneumatic dump-cars. The engine and tender together weigh 100 tons, and the locomotive has 19 x 24-inch cylinders and driving wheels 44 inches in diameter. The tender has capacity for 6 tons of coal and 4500 gallons of water.

Locomotives of this type are successfully employed in several special classes of service, where moderate speeds will suffice. They are extensively used in open pit mining operations in Minnesota, for example, and are popular for heavy switching about mills, furnaces and large industrial plants. The work here is often similar to that in a railway terminal yard, and the locomotives are equipped with brakes, couplers and other fittings, specially selected to suit the service requirements.

With their extensive experience, The Baldwin Locomotive Works are prepared to build locomotives specially adapted to meet difficult operating conditions. The facilities of the plant are such that quick delivery can usually be made if necessary —an important item, especially in contracting work, where it is sometimes imperative that additional motive-power be secured on short notice.

Steam Traction Versus Teams

It is, of course, nearly impossible to give accurate figures representing the cost per ton mile of hauling by steam tractors. Not only do varying grades create a factor which renders this impossible, but the difference in the character of roads must be considered.

Contractors must approximate the cost of operation before that operation is started, but they cannot afford to base their estimates on estimates of cost which do not apply to their particular job. It is valuable, however, to make comparisions under particular conditions.

In the case in point, it has become well established that steam traction is far more economical and satisfactory than hauling by teams. The Buffalo Pitts Company, of Buffalo, New York, make the statement that on a good level macadam road, where a team could easily haul a three or four ton load twenty miles in ten hours, a Buffalo Pitts Special Contractors' engine with special contractors' cars, such as are illustrated herewith, would easily haul from sixty to eighty tons from twenty-five to thirty miles in ten hours. On a good dirt road where a team could move from two to three tons twenty miles in ten hours, their engine could haul from forty to sixty tons from twenty-five to twenty-eight miles in ten hours. On a road that is soft or sandy, or where the grades are steep where a team could move only one or two tons over the road the engine would handle from twenty to thirty tons. The total cost of operating this special engine and cars is about ten dollars per day, made up of the following items:

Wages of engineer	$3.50 per day
Wages of helper and fireman	1.75 per day
Coal	2.00 per day
Oil and Incidentals	.50 per day
Interest and depreciation on an outfit costing about $4,500.00	2.25 per day
Total	$10.00 per day

This cost naturally varies somewhat according to the variations in the cost of materials, help, etc., in different localities, but it will be found approximately correct.

Experience has shown that such an outfit will easily do the work of from ten to fifteen teams.

Buffalo Pitts Tractor and Road Freight Car.

Although the first cost of such an outfit is undoubtedly higher than a team outfit, the cost of maintenance is considerably less. The steam outfit is safer over hilly, rough roads, as the reverse may be used as a brake, powerful, but steady in its application. The double cylinder engine gives a steady pull without jerk or jar whether running slowly or fast. It is easy on gears and wheels and capable of continuous operation.

The Buffalo Pitts Company have designed a special equipment for moving heavy tonnage, such as contractors' equipment and machinery. This consists of a double-cylinder road locomotive and road freight cars, such as illustrated herewith. The road engine shown, is hauling one of several 25 ton dinkeys into the Catskill Mountains from the railroad, over narrow, crooked and steep mountain roads. The car is a cross-reach type having a reversible swivel truck at either end. It is so designed that the rear wheels will track with the front ones around curves; making it particularly desirable on narrow, crooked roads.

The contractor owning the outfit illustrated, has 18 Buffalo Pitts outfits upon his Catskill Aqueduct contract.

Steel Bunks

It is conceded by all progressive officials who have studied the subject that it is a decided economy to look to the comfort and welfare of the workmen, especially in such matters as pertain to sanitation and rapid recuperation of the energy expended in heavy manual labor.

The advent of the steel bunk, with flexible wire link spring fabric, as illustrated herewith, has proven a boon both to the workman and to the employer, for in addition to affording the laborer the rest his system demands, it tends to keep him satisfied and at the same time gives him renewed vigor for the next day's work. These bunks are practically indestructible, can be packed and shipped flat and set up in five minutes on arrival at camp—their manifold and manifest advantage over the dirt collecting, vermin infected, wooden bunk is so apparent that comparison is useless, and; as a matter of fact, they are cheaper than the built-in wooden bunk when longevity and service are considered. Many railways are equipping their camp cars and work trains with these bunks, with the result that they succeed in getting and holding a better class of workmen.

These bunks are made in many variations of single and double deck construction by the Haggard & Marcusson Co., Chicago.

Interior of Wausau Southern Lumber Company's Sanitary Sleeping Car, Fitted With Haggard & Marcusson Bunks.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review in this column such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the prices named.

Western Wheeled Scraper Co.,—Aurora, Ill. Catalogue of machines for handling earth and stone 6¼ x 9¾, 136 pages, paper [illegible] splendidly illustrated, describing various types of earth and stone handling machinery manufactured by this concern. This catalogue is divided into four sections. Section one, describing the various sizes of dump cars. Section two, scrapers and plows. Section three, elevating graders and wagons. Section four, road machinery.

Raymond W. Dull Company, Chicago, Illinois. Catalogue 7 x 10, 40 pages—describing various designs of plants for washing sand and gravel. Dull's improved conical screen is illustrated and described fully as are the various types of scrubbers, separators, belt conveyors, elevators, dragline excavators, feeders, etc. Various well known plants equipped with Dull machinery are described and illustrated in full.

Earthwork Haul and Overhaul, by J. C. L. Fish, 8 vo. 165 pages. Illustrated, cloth bound, $1.50 net. This book contains answers to questions on overhaul and on the use of the mass curve in planning distribution. It is divided into two parts, haul and overhaul, and economical distribution of material along the profile. The first part is written to serve railroad contractors, computers, students and teachers. It should be a great help to railroad contractors in submitting bids on work involving overhaul. Part two is devoted to the elements of the problem of economical distribution. A practical and well written book well worth attention. John Wiley and Sons, New York.

Continental Car and Equipment Company—Catalogue 6x9 board cover, profusely illustrated, 80 pages, describing in great detail aided by many interesting photographs, the various types of dump cars manufactured by this concern and the various uses to which they are put.

Arkansas

Yellville—R. H. and G. A. McWilliams, Steger Building, Chicago, Ill., were successful bidders at $80,134.40 for constructing levees and excavating interior ditches on the Marion County Drainage project. The unit prices are as follows: Levee at 13.5 cents per cubic yards; muck ditch at 30 cents; clearing at $80 per acre; interior ditches at 14 cents per cubic yard. Edmund T. Perkins Engineering Company, Chicago, Ill., engineering firm in charge.

Fort Smith—The Kansas City Southern Railroad will build its line into Fort Smith, Ark., within next year. Survey has been completed for route from Gans to Cherokee Junction, Oklahoma, where connection will be made with the Iron Mountain. G. E. Johnson, Kansas City, Mo., is chief engineer.

Arizona

Phoenix—Frank Barr, one of the best known real estate dealers in Phoenix and a man prominent in all public affairs, died recently at his residence 1100 East Portland Street.

Mr. Barr was for twenty-five years, a steam shovel engineer and was known from coast to coast. The news of his death will come as a shock to his host of friends, He was taken ill about the first of July with ptomaine poisoning, but not until the 15th inst. was his condition regarded as serious.

Mr. Barr came to Phoenix about nine years ago from Ohio and during those years he has been prominently identified with all public affairs. He was in the real estate business with Donald Green, with offices on West Adams Street. He had watched Phoenix grow from a very small town to a city and was one of the most progressive business men in the city. He was a prominent member of the Masonic, Odd Fellows and Moose Lodges.

Mrs. Barr tells us that the last rational words he spoke were of his old steam shovel friends.

California

Fresno—Southern Pacific Railway is to construct a spur from Fresno to the iron ore deposits in Fresno county, located a few miles from the Mariposa Great Trees.

Canada

Nova Scotia—The Halifax Terminal Ry. has awarded the contract to the Cook Construction Co., Sudbury, Ont., and A. B. Wheaton, Amherst, N. S., for the construction of its proposed line from Rockingham to the site of the proposed terminal works at Halifax, a distance of five miles. The contract price is $1,500,000.

Streetsville, Ontario—Wm. Nostrant is erecting an 18-B Bucyrus shovel for Jones and Girourard here.

Cuba

Cafetal—Frank Wilkinson is erecting a class 20 Bucyrus dragline excavator for Campion & Company near here.

Florida

Miami—A. B. Sanders was awarded contract for the excavation of 1,250,000 cubic yards of material from the canals of the Palm Beach Farms Company, which together with the contract for a like quantity of excavation which he received some time ago, will make 2,500,000 cubic yards of excavation for that company, and will give him the entire work of digging ninety miles of main canals and laterals through the property of this company, which lies between Hillsboro and the Palm Beach canals.

Foreign

Chile—J. G. Beck is at present in Taltal, Chile erecting a Bucyrus class 14 dragline excavator for the Du Pont Nitrate Company, New York.

Georgia

Augusta—Michael P. McGrath has been awarded contract to construct the Carolina & Georgia Railway between Augusta and Columbia, Ga.

Idaho

Boise—The Butte, Boise & Winnemucca Railway Co. is reported incorporated to construct a railroad 650 miles in length between Butte, its northern terminal, and Winnemucca, the southern terminal. Boise is to be the headquarters of the company. L. O. Leonard, Pres., Boise; Chester N. Halveston, Secy., Boise.

Illinois

Oquawka—Contracts have been awarded to Munn-Reise Construction Company of Kansas City, Mo., and the LaCrosse Dredging Company, LaCrosse, Wis., for construction of ditches and levees in the Henderson County Drainage District Nos. 1 and 2. Harman Engineering Co., Peoria, Ill., engineers.

Chicago—Charlie Weber is operating a Vulcan shovel for the Elmhurst-Chicago Stone Company.

Kansas

Notes from Pittsburg

By W. S. Russell.

The 4th of July was a big day at Pittsburg. Never before were such crowds of people here to celebrate the national holiday. They came from the small towns and country by trolley cars, wagons, buggies and other rigs; farmers with their families by the hundreds all bent on having a good time. Lincoln Park was the center of amusement and by noon it was jammed. The children had the best time with the merry-go-round, sliding ladder, the chutes, swinging, etc. There was a concert at the Auditorium, dancing in the pavillion and plenty to eat and drink. The festivities lasted until late and wound up with a display of fireworks.

The demand for coal is looking up as the wheat threshing season has opened up and a good fall trade is expected. We quote prices as follows: F. O. B. mines. Lump $2.00, nut, $1.75, slack $1.50, mine run $1.65. The coal stripping steam shovels are all working, some of them double shift.

The new 150-B Bucyrus steam shovel purchased by the Moka Coal Company, of Pittsburg, has been installed on their 165 acre field a mile south of Mulberry and is now working in about 15 feet of overburden, having several hundred feet of coal uncovered. This shovel is doing fine work and superintendent Lee Bigley is very much pleased with it.

The Clemens Coal Co. are operating a 150-B Bucyrus steam shovel a mile north of Pittsburg, west of the base ball park. The stripping runs from 16 to 22 feet in depth and from 4 to 6 feet of hard blue shale overlaying the coal. The shovel digs this shale without blasting, which demonstrates the immense power of this style of shovel. Ira Clemens is the president and general manager with offices in the Globe building. The coal from the field is of an extra good quality and meets with a ready sale.

The Cherokee Girard Coal Co., of Mulberry, have started up their coal stripping plant recently installed and are now ready for business. Alex McFarland attends to selling the coal and O. S. Hubardt manages the plant. They have a fine strip field and a good quality of coal.

Smith, Scott & White are now running double shift in their coal stripping plant and Bucyrus steam shovels.

The C. H. Markham Coal Co. are now running their Bucyrus steam shovel double shift at their Curranville strip mine.

The Central Coal & Coke Company have opened offices in the Globe building at Pittsburg.

Frank W. Pierce, of the Pierce Coal Co., spent the 4th of July at Pittsburg. His company are now installing a Marion steam shovel on their coal field near Mulberry.

Mr. C. S. Stevenson, a U. S. government engineer, is at the Stilwell Hotel. He is inspecting the Pittsburg coal field. There is a proposition being considered by the Empire District Electric Company of Joplin, to extend a line to the Pittsburg coal fields to furnish electric current to operate coal mining machinery and electric shovels in coal stripping. It is claimed that this power will have advantage over steam, but as yet nothing definite has been determined.

Mr. A. K. Craig, at Sheridan, Wyo., was a recent visitor at Pittsburg. He is operating an underground coal mine near Sheridan. Mr. Craig formerly lived in Pittsburg having charge of the coal properties of the Missouri Pacific R. R. for several years. He had a pleasant visit shaking hands with old acquaintances.

Louisiana

Port Allen—Sealed proposals will be received at the office of the Board of State Engineers, Room 213 New Orleans Court Building, New Orleans, La., until August 8, 1913, for the construction of the following levee work on the Atchafalaya River, Right Bank: Port Barre South Levee, new levee, approximate contents, 1,000,000 cubic yards. Deposit required $2,600. Bond required, $100,000. Other information as to the location, character of work, manner of submitting proposals, execution of contract and bond, and time of beginning and completing of work, as well as blank form for submitting proposals may be had on application to the Board of State Engineers, at New Orleans, La., or to T. G. Erwin, Secretary, Atchafalaya Basin Levee District, Port Allen, La.

Michigan

Bay City—John Hartopp is testing the 20 inch Bucyrus hydraulic dredge for the Duluth-Superior Dredging Company between Bay City and Saginaw.

Minnesota

Notes from Duluth

James Mishler, of Duluth has completed his contract at the Vivian mines and has moved his 14-B shovel into his new contract at the Graham mines. The machine is at present grading switches from the main line to the mine.

Mr. Michael Godfrey, formerly superintendent for the Oliver Mining Company in the Colerain District, has recently been transferred to Virginia. Mr. Hawkins, the former superintendent in Virginia, recently resigned his position to enter business in Canada.

Mr. Roy Salsick has been promoted from assistant superintendent to general superintendent of the Colerain District.

H. C. Carson of Minneapolis is making good progress with his contract with the University of Minnesota. He states that his 14-B Bucyrus shovel is loading wagons averaging 500 cubic yards a day.

The Grant Iron Mine, near Buhl, Minnesota, on the Mesaba range, recently shipped 742 carloads of ore during one week, the largest number ever loaded from a state mine during a similar period, according to a report submitted by the State Auditor by F. A. Wildes, chief inspector of State mines.

The Duluth-Superior Dredging Company of this city has commenced work on its contract to enlarge the Duluth harbor basin, having placed the 10 yard Bucyrus dredge "Old Hickory" on same. There are 925,000 cubic yards of earth, scow measurement, involved in this contract.

Ironton—Frank Sederlund is operating an 85-C Bucyrus shovel for the Pennington Mining Company.

Bemidji—Red Lake Northern R. R. is having surveys made for the construction of its proposed line from Akeley to Warroad, Minn. J. J. Osphal, Bemidji, Minn., is interested.

Missouri

Fulton—It is reported that Mulvill Brothers, railroad contractors, who have the contract for grading the roads in the Fulton district, are negotiating for the lease of the coal rights of land two miles wide by six miles long between Fulton and Ham's Prairie. If the papers go through they expect to open and operate the mines in the near future. This will undoubtedly call for the building of a railroad between here and Mokane.

Shelbyville—The Shelby Northwestern Railway Company has profiles prepared and will soon let some nice team work on its line between Shelbyville and Novelty, Mo. H. W. Houck is secretary-treasurer.

Notes from Kansas City

By M. T. Babb

Cameron, Joyce & Co. have just secured about thirty thousand yards of Santa Fe work near Corwith, Ill. This is yard work and suitable in every way for a machine outfit. At this writing Mr. O'Brien of the above firm is looking for a good machine outfit to do the work. He can be addressed as follows: R. E. O'Brien, 4138 Holly St., Kansas City, Mo.

A number of county road contracts have been let in Jackson County this week. Among the successful bidders were Feren Bros., Kansas City, Kans., Jas. Feren, Kansas City, Mo. and Davidson Bros. of Hickman Mills, Mo. Milton & Hood also secured a piece of work. These contracts include grading road ways, also the rocking of same and the complete finish.

Word has been received here of the award by the C. R. I. & P. R. R. to the Flick Construction Co. of Chicago, of about seventy thousand yards near Chariton, Iowa. This is a spur from the main line to the mines of the Inland Coal Co. The work has been sub-let to E. A. Gilford.

W. M. Spencer of Indpendence, Mo. has secured quite an extensive crushed rock contract at Lees Summit, Mo. Work will be rushed at Mr. Spencer's quarry until the contract is completed.

Mr. J. Erasmus McGeer, the popular labor agent states that calls for labor are numerous but that the supply of men is very much limited. Such a condition does not strike one as bespeaking hard times.

Crop conditions in this section were considerably disturbed last week by one of the hottest spells experienced in years. While the lake regions were enjoying a decidedly cool spell, we in the southwest were burning in a temperature of over one-hundred degrees. A rain finally brake the heat wave but not before considerable damage had resulted.

W. C. Clark of the Bridgton Construction Co. was a caller at our office this week. Mr. Clark reports good progress on his company's contract near Missouri City, Mo.

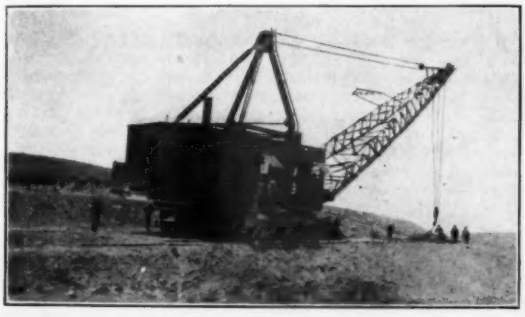
S. D. Tripp is in the city at this writing. He is now idle but soon expects to land a nice contract for his large team outfit.

L. I. Viall was in the city a short time ago. Mr. Viall stated he might have something of interest to announce on behalf of his company, Messrs. Wood, Bancroft & Doty, within the next ten days.

Montana

Toston—Contract for construction of 20 miles of line for Three Forks, Radersburg R. R. has been awarded to Frank Shull, Toston, Mont.

Malta—Sealed proposals will be received by the United States Reclamation Service, Malta, Mont., until August 6, 1913, for earthwork and structures on the second unit of Dodson North Canal, laterals and waste-water ditches, involving about 300,000 cubic yards of excavation, 1,200 cubic yards of reinforced concrete, the placing of about 100,000 pounds of steel reinforcement and the placing in wooden structures of about 140,000 feet B. M. of lumber. The work is situated on the north side of Milk river, adjacent to the main line of the Great Northern railroad in the vicinity of Wagner, Exeter and Malta, Mont. For particulars address the United States Reclamation Service, F. H. Newell, director, Washington, D. C., Great Falls or Malta, Mont.



Exeter—The accompanying illustration shows the class 24 Bucyrus dragline excavator recently purchased by the T. W. Crow Construction Company. The machine is digging an irrigation ditch for the United States Reclamation Service at this point.

New York

Seneca Falls—H. C. Benjamin is operating a class 14 Bucyrus dragline excavator for John F. Dolan Construction Company. The machine is engaged in making a fill on the Seneca Falls branch of the Lehigh Valley railroad. Mr. Benjamin reports that this machine a few days ago excavated 1250 cubic yards in nine hours.

New York—Jim Dorgan has recently finished the erection of a 14-B Bucyrus shovel for Carpenter and Boxley. The machine is at present at work in the Brooklyn subway.

Ohio

Tyndale—George Burris is engineer and George Bowers fireman on the Pan Handle R. R. Bucyrus pile driver at work on this section.

Coulter—William Smith is engineer and E. Smith is fireman on the Pennsylvania railroad's Bucyrus locomotive pile driver, whose headquarters is at this point.

Melrose—Phillip Rouse has erected a Little Giant Vulcan shovel at this place for Bobenmeyer, Sherard & Randolph.

Panama

Permission has been granted to an agent of the Spanish-American Iron Company, operating mines in Cuba, to recruit not more than 300 Spanish laborers in Colon and Panama who are not employed by the Isthmian Canal commission or Panama railroad.

Pennsylvania

Swissvale—E. Brubaker, engineer and H. G. Brubaker cranesman are operating a 95-C Bucyrus shovel for the Pittsburg Construction Company, loading slag without blasting.

Woodhill—George Williams has recently completed the test of two 40-R Bucyrus shovels for A. McMullen. The shovels are engaged in tunnel work for the Allegheny Construction Company, one at Woodhill and the other at East Brady, Pa.

East Brady—The Allegheny Construction Company are building two double track tunnels on the Allegheny division of the Pennsylvania railroad. Mr. E. J. Johnson is general superintendent with headquarters at East Brady.

The East Brady tunnel is 2600 feet long, 21 feet 6 inches in height and 30 feet in width. The Wood Hill tunnel is about the same length and size. Two Bucyrus 40-Rs and two Marion Model 41's are digging the approaches to the tunnel.

J. W. Reed is superintendent of the East Brady tunnel, and N. Howard is superintendent of Wood Hill tunnel. J. A. Smith, engineer and D. A. Smith, cranesman, are operating the Bucyrus 40-R at East Brady, and Walter House, engineer, and J. G. Clark, cranesman, are running the Marion shovel.

At the Wood Hill tunnel the 40-R is being operated by E. Moore and C. Work.

The John A. Kelly Co. have the contract for the Kennerdell tunnel, which has a length of 3300 feet. They are operating a Bucyrus 60 and a Marion 41.

Tennessee

Chattanooga—The Dailey Construction Co., 304 Walnut street, Chattanooga, Tenn., has secured another good sized contract from the Nashville, Chattanooga & St. Louis Ry.

Byrnedale—P. McEntyre is operating an 18-B Bucyrus shovel for the Lehigh Valley Coal Company at Centralia.

Texas

Pleasanton—The San Antonio, Uvalde & Gulf Ry. has awarded a contract for grading on its extension south from Pleasanton, Tex. to Ward & Lee, Mathis, Tex.

Winchester—Gilbert La Mair is erecting a class 45 Atlantic type shovel for the San Antonio and Aransas Pass railroad here.

Utah

Notes from Salt Lake City and Vicinity

By H. N. Steinbarger.

The Christensen Construction Company of Salt Lake City, Utah, are making good progress with their Susanville, California work under the able supervision of N. H. Heiselt, superintendent. The work consists of two miles of heavy shovel work and some lighter team work. One 70-C Bucyrus shovel, two 18 ton Vulcan dinkey locomotives, 24 Western 4-yard cars and 30 teams comprise the outfit. On their Tucker, Utah, contract they have two 70-C Bucyrus shovels with full Vulcan locomotives and Western car equipment. This contract is now about 80 per cent complete.

D. H. Christensen, president of the Christensen Construction Co., is also superintendent of schools of Salt Lake City. During the recent convention of the National Educational Association during July, he was the busiest man in town. He took a very active part in all the proceedings of the convention and in entertaining the delegates and visitors. It was largely through his efforts that Salt Lake secured the convention. Every visitor will long remember the delightful and wholesome western spirit, which was evident in every direction.

We are sorry to learn that G. W. Hamilton, of Hamilton and Gleason, railroad contractors on the D. & R. G. Ry. work at Tucker, Utah, spent ten days in a Salt Lake City hospital during July. He was threatened with typhoid fever, but the doctors were successful in breaking up the fever early in the game. G. W. is back in harness again and is making a great record on his present work.

We regret exceedingly to learn that during July, John S. Young, of Young and Crook, now at Helper, Utah, was called to Denver on account of serious illness and death of his father-in-law, a much respected resident of Denver.

Young and Crook, of Denver, are making fine progress in their present work. About the middle of July they cut in their new 70-C Bucyrus shovel and Vulcan dinkey outfit on the "Coal Road" contract at Helper, Utah, and are more than pleased with the outlook.

Mike Leahy is the proudest shovel engineer in the states. He is running Young and Crooks new 70-C Bucyrus at Helper, Utah. He hopes to break all records in Utah. If there is anything Mike likes better than running a new 70-C, we are not informed what it is.

The I. W. W. have been very active in Utah during the past two months. During June they caused considerable uneasiness and unrest in the camps along the line of the D. & R. G. Ry., Soldiers Summit regrade work. In fact there was a general walkout of the laborers on the entire job. We are informed that conditions and wages in all the camps were far above the average.

July 24th was "Pioneer Day" all over the state of Utah. An annual event, in celebration and in honor of the arrival of the Mormon Pioneers in Utah in 1847. It is by far the biggest holiday of the year in Utah.

Among those who visited Salt Lake City on Pioneer Day were Charlie Dooling of Dooling Bros., John S. Young, of Young & Crook, D. S. Griffin, manager for Kilpatrick Bros. and his son, who is just breaking into the game of contracting, G. W. Hamilton of Hamilton & Gleason, and several others from down around the D. & R. G. Ry. work near Tucker, Utah. It was "some big day", historically important and strikingly spectacular, especially when Charlie Dooling cut loose.

D. S. Gerow of Denver, arrived at Helper, Utah in his automobile on the 17th of July with his family. They expect to remain some time at his camp, seven miles from Helper, where his work on the "Coal Road" is now well under way.

D. S. reports a fine trip, with no accidents and only minor machine troubles. They followed the course of the proposed Midland Trail, and found the roads generally good. Mr. Gerow's work is mostly hard rock, some loose rock and boulders were encountered at the start, but the shovel is now well into the hard stuff. D. S. likes this class of material at hard rock prices, we might add, and he says that his 70 ton Bucyrus is "some bear" of a shovel in rock.

On Sunday, July 20th, a picked base-ball team played the Helper, Utah team at Helper. We understand it was very interesting, and some wonderful exibitions of base-ball were handed out.

We can't understand why the score was not sent in. Consequently we are wondering why those interested are so reticent. Paul Wigton of Denver, civil engineer, with D. S. Gerow, pitched and "young" Griffin, son of Dan Griffin caught. They undoubtedly would make a good battery for any team in the land as both have had a large experience. Wigton has been out of practice for some time, but with all his pitching was par excellence. "Griff" caught splendidly as he has all season back, in Denver.

The call to professional ball has been strong, but both have felt a stronger call to their chosen vocations. We are sorry not to have learned the names of the other players, anyway, we hope they won.

During June the D. & R. G. Ry. received bids on a bridge filling job near La Veta, Colo. They were considered high, as were the bids received about July 1st, and it was decided that the B. & B. department should do the work.

About the middle of July two shovels were secured from the Missouri Pacific R. R. and placed in service. It is reported that good time is being made. The slogan of the D. & R. G. is "Safety First", and the efforts to make the entire road bed, bridges and all structures safe is very commendable.

Virginia

Roanoke—The Vaughan Construction Company, of Roanoke, Va., was awarded contracts involving an aggregate cost of $425,000. The first contract was for grading five miles of double track on the Virginian railway between Mullins, W. Va., and Taft, W. Va., and for enlarging the yards at Elmore, W. Va. This will require 400,000, cubic yards of excavation, involving a cost of $200,000. These new improvements are the result of a recent large bond issue made by the Virginian railway. The work will be commenced next week.

This company also was awarded a contract for grading ten miles of double track on the Seaboard Air Line railway from Hamlet, North Carolina, north, This work will require 500,000 cubic feet of excavation. The Vaughan Company has recently completed the construction of ten additional tracks for the yards at Hamlet. A contract was awarded for enlarging the Brown street yards on the Seaboard Air Line at Richmond. This will require 40,000 cubic yards of excavation involving a cost of $25,000. This work will be commenced this week. The Vaughan Construction Company has recently commenced the construction of a bridge over the Savannah river between Clyo, Ga., and Barnett, S. C. This work will involve a cost of $30,000. This concern has had a number of contracts for railroad work in the south in recent years.

Wisconsin

Manitowoc—Wm. Stanton is superintending the erection of a 12 x 16 Bucyrus dipper dredge for Fitzsimmons and Connell at the plant of the Manitowoc Ship Building and Dry Dock Company. The latter company is building the hull.

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BUCYRUS DRAGLINE EXCAVATORS

This Bucyrus Dragline is shown enlarging and strengthening a levee at Baton Rouge, La. for the Southern Dredging Co. It carries a 3½-yd. bucket and 100-foot boom. It has averaged 2000 yds. of pay material in 20 hours, despite the fact that it was stripping old bark from levee site 50 per cent. of the time.

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30 Church Street, New York City

Contractors Machinery and Equipment thoroughly Repaired and ready for Immediate Shipment.

STEAM SHOVELS

5 MARION MODEL 60
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3 ATLANTIC 70 TON
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1—600 ft. three-ton Lidgerwood Cableway.
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⅞-yd. full revolving steam shovel completely overhauled and in best possible condition. Address Room 615, United Bank Building, Paterson, New Jersey.

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1 MODEL 30 OHIO STEAM SHOVEL—1-yd. dipper, working weight 38 tons, in service 1½ years, is in good condition.

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Position Wanted

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Steam Shovel Runners

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Have you not wasted days of valuable time moving from one cut to another?

Have you not been kept from bidding on work by the fear of the above conditions?

If you have—read what the owner of the dragline shown above says:

"As to the caterpillar traction it is all and more than you have claimed for it. We gave it a very severe test on our first move, moving in a heavy rain through a cultivated field and climbing some grades that were over 10%." "The caterpillar has surely had a hard test lately and so far has come to the scratch; we are working in a corn field, and it has rained hard for the past several days so that we had to have four big mules to pull about ½ ton of coal to the machine, still the traction has pulled through it, though sometimes the mud was half way up the frames."

WE ALSO BUILD BUCYRUS, VULCAN AND ATLANTIC TYPE SHOVELS OF ALL SIZES. REVOLVING SHOVELS, DREDGES OF ALL TYPES. RAILWAY WRECKING CRANES, LOCOMOTIVE PILE DRIVERS, UNLOADING PLOWS

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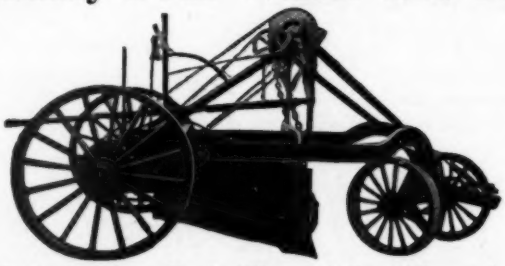

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Works Well on Both Wet and Dry Materials.

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No need of extra man to load or dump—the driver does this easily.

ASK ABOUT OUR T-L DRAG LINE BUCKET.

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The chain that wears longest and digs the greatest yardage. We carry in stock for immediate shipment, the following sizes of

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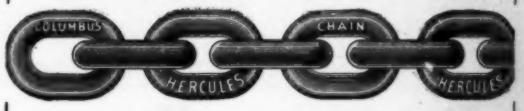

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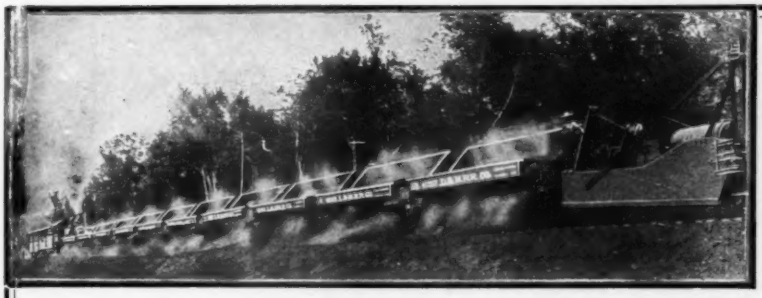

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Direct air from the regular air-brake train-line dumps and rights each car.

One man controls the operation of an entire train.

Catalog 64-E.

For further data and cuts, see Engineering News, May 8, front cover; May 15, p. 83; May 22, p. 105; May 29, p. 109; Contractor, May 15, front cover; June 1, inside front cover; Railway Age Gazette, May 9, p. 13; May 16, p. 34; May 23, p. 26-b; May 30, p.13; Engineering and Contracting, May 8, back cover; May 15, p. 35, May 22, p. 34; May 29. p. 6; Excavating Engineer, June, p. 353; Steam Shovel and Dredge Journal, June 15, p. 537. Also see Catalog 64-E for additional facts.

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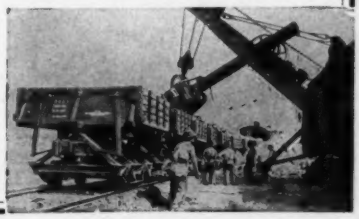

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Cleaning Up the Debris at Dayton, Ohio.

Troy, Ohio, April 28, 1913

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The Dayton Relief Committee, headed by John H. Patterson, President of the National Cash Register Company, bought 75 TROYS. Manufacturers and business houses all through the flooded district are ordering TROYS by wire or letter to help them haul away the muck and wreckage.

1½ yard Troy Bottom Dump Wagon $117.50
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Brake $9.50 extra. F.O.B. Troy. Prompt Shipmemt.

If you aren't in the mud, get a TROY and help dig your friends out. You will never regret the investment --you can always find use for a Dump wagon.

You can get better Dump Wagons from Troy than any place else--and get them quicker. Write or wire us.

Very truly yours,

THE TROY WAGON WORKS CO.
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A Relief Station at Dayton, Ohio.

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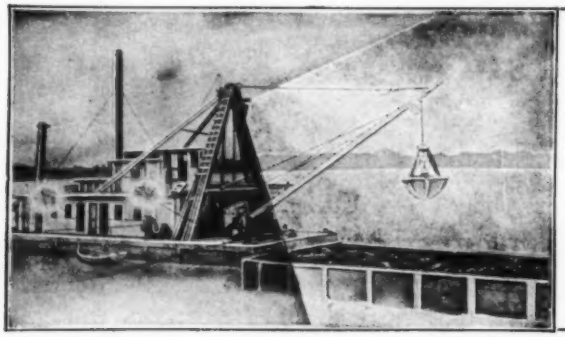

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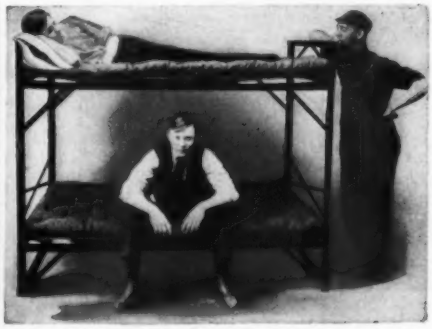

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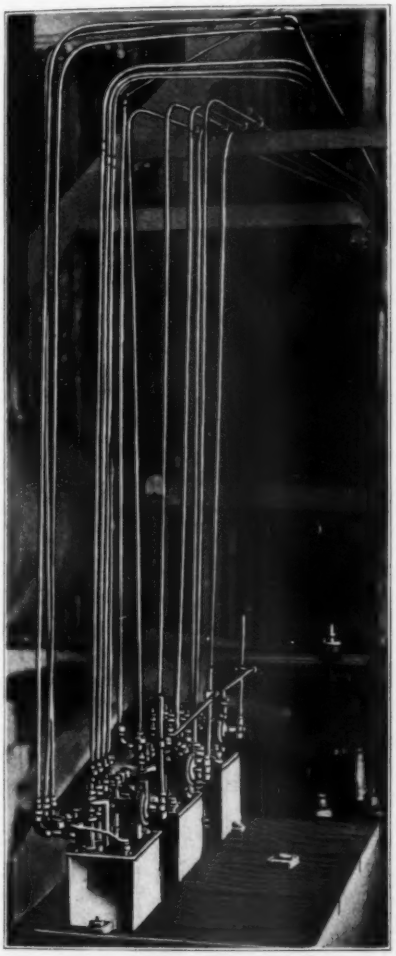

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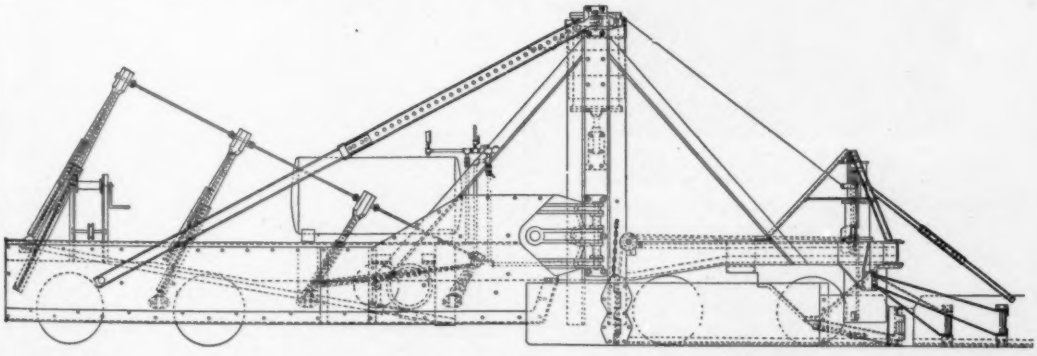

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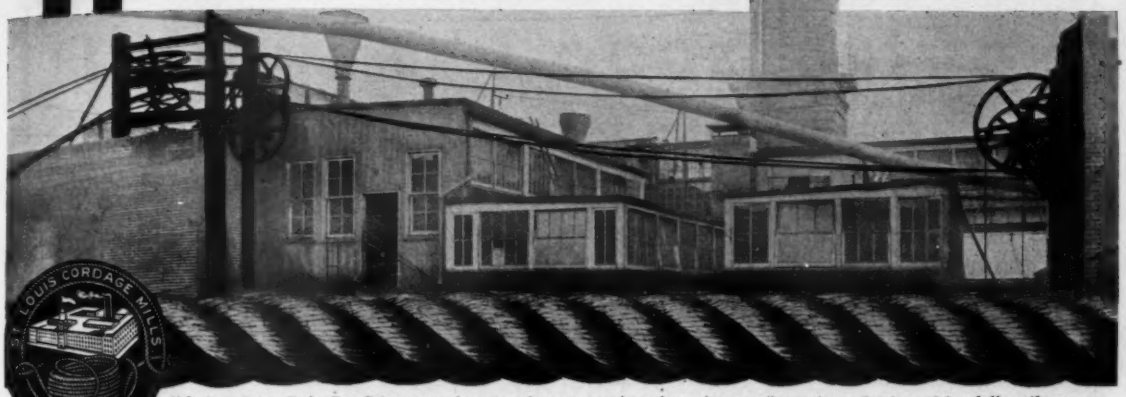

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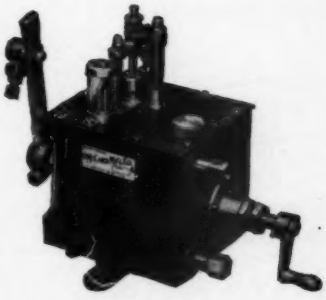

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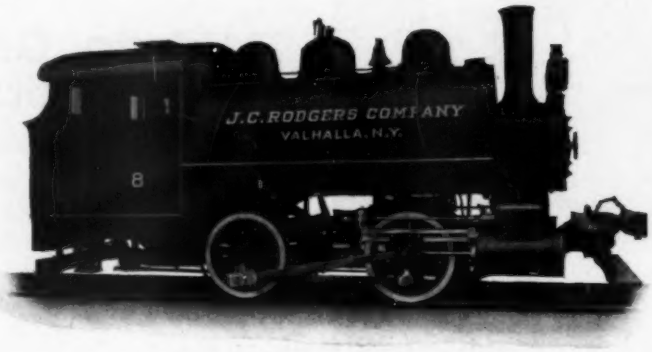

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